

7. REGULATIONS AND ADVISORIES

International, national, and state regulations and guidelines pertinent to human exposure to phenol are summarized in Table 7-1. The IARC classification for phenol is Group 3, not classifiable with regard to its carcinogenicity to humans (IARC 1989).

The permissible exposure limit time-weighted average (PEL-TWA) is 5 ppm (OSHA 1997). ACGIH (1998) and NIOSH (1992) also recommend a TWA exposure limit of 5 ppm for occupational exposure.

Phenol is regulated by the Clean Water Effluent Guidelines for the following industrial point sources: electroplating, organic chemicals, steam electric, asbestos, timber products processing, metal finishing, paving and roofing, paint formulating, ink formulating, gum and wood, carbon black, metal molding and casting, aluminum forming, and electrical and electronic components (EPA 1988a). EPA has established a Reportable Quantity (RQ) of 1,000 pounds (EPA 1998b). The lifetime health advisory for phenol in water is 4 mg/L (EPA 1996a). The EPA cancer classification for phenol is D, not classifiable as to human carcinogenicity (IRIS 1998).

The EPA reference dose (RfD) of 0.6 mg/kg/day (IRIS 1998) is based on a NOAEL of 60 mg/kg/day for developmental effects (decreased fetal body weights) observed in rats at a dose of 120 mg/kg/day (Jones-Price et al. 1983a).

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TABLE 7-1. Regulations and Guidelines Applicable to Phenol

Agency	Description	Information	References
<u>INTERNATIONAL</u>			
IARC	Carcinogenic classification	Group 3 ^a	IARC 1989
<u>NATIONAL</u>			
Regulations:			
a. Air:			
OSHA	PEL-TWA	5 ppm (19 mg/m ³)	OSHA 1997 (29 CFR 1910.1000)
b. Other:			
EPA	Reportable quantity	454 kg (1,000 lbs)	EPA 1998b (40 CFR 302.4)
	Required reporting under Title III SARA	Yes	EPA 1998c (40 CFR 372)
	Designated as a hazardous substance	Yes	EPA 1998a (40 CFR 116.4)
FDA	Indirect food additive	Yes	FDA 1998b (21 CFR 175 subsections 300, 380, & 390) FDA 1998c (21 CFR 176.170) FDA 1998d (21 CFR 177 subsections 1210, 1580, 2410, & 2600)
Guidelines:			
a. Air:			
ACGIH	TLV-TWA	5 ppm (19 mg/m ³)	ACGIH 1998
EPA	RfC (inhalation)	None listed	IRIS 1998
NIOSH	REL (TWA)	5 ppm (19 mg/m ³)	NIOSH 1997
	REL (ceiling)	15.6 ppm (60 mg/m ³)	NIOSH 1997
b. Water:			
EPA	MCLG	None listed	EPA 1996c
	MCL	None listed	EPA 1996c
	Health advisories:		EPA 1996c
	1-day (child)	6 mg/L	
	1-day (adult)	None listed	
	10-day (child)	6 mg/L	
	10-day (adult)	None listed	
	Longer term (child)	6 mg/L	
	Longer term (adult)	20 mg/L	
	Lifetime	4 mg/L	
	DWEL	20 mg/L	EPA 1996c
	Ambient water quality criteria for protection of human health		IRIS 1996
	Water and fish	3.5 mg/L	
	Fish only	None	

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TABLE 7-1. Regulations and Guidelines Applicable to Phenol (*continued*)

Agency	Description	Information	References
<u>NATIONAL</u> (Continued)			
	Ambient water quality criteria for aquatic organisms		IRIS 1996
	Freshwater (acute)	10 .2 mg/L	
	Freshwater (chronic)	2.56 mg/L	
	Marine (acute)	5.8 mg/L	
	Marine (chronic)	None listed	
b. Other:			
ACGIH	Biological exposure index	250 mg/ g creatinine	ACGIH 1998
EPA	RfD (oral)	0.6 mg/kg/day	IRIS 1998
EPA	CEGL	None listed	IRIS 1996
	Carcinogenic classification	Group D ^c	IRIS 1998
<u>STATE</u>			
Regulations:			
a. Air:	Acceptable ambient air concentrations		
Connecticut	(30 min)	1900 µg/m ³	CT Bureau Air Manage 1998
	(8 hour)	380 µg/m ³	CT Bureau Air Manage 1998
Louisiana	(8 hour)	452 µg/m ³	LA Air Qual. Div. 1998
Massachusetts	(24 hour)	52.33 µg/m ³	MA Div. Air Qual. Con. 1998
New Hampshire		63 µg/m ³	NH Air Res. Div. 1998
New York	(Short term)	4500 µg/m ³	NY Div. Air Res 1998
	(1 year)	9.6 µg/m ³	NY Div. Air Res 1998
North Dakota	(8 hour)	190 µg/m ³	ND Env. Health Sec. 1998a
South Carolina		190 µg/m ³	SC Bureau Air Qual. 1998
Vermont	(8 hour)	1900 µg/m ³	VT Air Pol. Control Div. 1998
Washington	(24 hour)	63 µg/m ³	WA Air Qual. Program 1998
b. Water:			
Kentucky	Domestic Water Supply	3.5 mg/L	KY Div. Water 1998
Louisiana	Drinking Water Supply	5 µg/L	LA Water Res. Div. 1998
Mississippi	Human Health (Water and Organisms)	300 µg/L	MS Sur. Water Div. 1998
Missouri	Drinking Water Supply	100 µg/L	MO Water Pol. Con. Pro. 1998
Nevada	Municipal or Domestic Supply	3.5 mg/L	NV Water Res. Div. 1998
New Hampshire	Human Health (Water and Organisms)	21 mg/L	NH Water Sup. Pol. Con. 1998
North Dakota	Human Health (Water and Organisms)	21 mg/L	ND Env. Health Sec. 1998b

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TABLE 7-1. Regulations and Guidelines Applicable to Phenol (*continued*)

Agency	Description	Information	References
STATE (Continued)			
Oklahoma	Human Health (Water and Organisms)	20.9 mg/L	OK Water Qual. Div. 1998
Pennsylvania	Human Health (Water and Organisms)	300 µg/L	PA Bureau Water Sup. Com. Health 1998
Rhode Island	Human Health (Water and Organisms)	21 mg/L	RI Div. Water Res. 1998
South Dakota	Human Health (Water and Organisms)	21 mg/L	SD Office Drink. Water 1998
South Carolina	Human Health	3.5 mg/L	SC Div. Water Res. 1998
Tennessee	Human Health (Water and Organisms)	21 mg/L	TN Water Pol. Con. 1998
Utah	Domestic Purposes	21 mg/L	UT Div. Drink. Water 1998
Vermont	Human Health (Water and Organisms)	21 mg/L	VT Water Qual. Div. 1998
Virginia	Human Health (Water and Organisms)	21 mg/L	VA Dept. Env. Qual. 1998
Wyoming	Human Health	21 mg/L	WY Water Qual. Div. 1998

^aGroup 3: Not classifiable as to its carcinogenicity to humans

^bGroup A4: Not classifiable as a human carcinogen

^cGroup D: Not classifiable as to human carcinogenicity

ACGIH = American Conference of Governmental Industrial Hygienists; CEGL = continuous exposure guidance level; CFR = Code of Federal Regulations; DWEL = Drinking Water Equivalent Level; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; MCL = Maximum Concentration Level; MCLG = Maximum Concentration Level Goal; NIOSH = National Institute for Occupational Safety and Health; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; REL = Recommended Exposure Limit; RfC = Reference Concentration; SARA = Superfund Amendments and Reauthorization Act; TLV = Threshold Limit Value; TWA = Time-Weighted Average